50. (New) The method of Claim 9, wherein the second mutant form of the reporter enzyme is linked to the C-terminal of the arrestin protein.

51. (New) The method of Claim 9, wherein the β-arrestin protein is an unidentified β-arrestin, a β-arrestin fragment or a mutant form of a β-arrestin protein.

52. (New) The method of Claim 18, wherein the GPCR and the first mutant form of reporter enzyme are linked together by a polypeptide linker represented by the formula -$(GGGGS)_n$-.

53. (New) The method of Claim 52, wherein n is 2 or more.

54. (New) The method of Claim 52, wherein n is 4.

55. (New) The method of Claim 18, wherein the second mutant form of the reporter enzyme is linked to the C-terminal of the arrestin protein.

56. (New) The method of Claim 34, wherein the GPCR and the first mutant form of reporter enzyme are linked together by a polypeptide linker represented by the formula -$(GGGGS)_n$-.

57. (New) The method of Claim 56, wherein n is 2 or more.

58. (New) The method of Claim 56, wherein n is 4.

59. (New) The method of Claim 34, wherein the second mutant form of the reporter enzyme is linked to the C-terminal of the arrestin protein. --

REMARKS

Support for newly added Claims 38-59 can be found in the specification at the following locations: page 11, lines 8-9 and 23; page 12, lines 6, 13, and 20; page 13, lines 1-2, 4-5, 7-8 and 10-11; and in FIGS. 10A-10J, 11A-11J, 12A-12J, 13A-13J and 14-22.

According to the Official Action, the drawings do not comply with 37 C.F.R. § 1.821(d), which requires a reference to a particular sequence identifier (SEQ ID NO:X) be made in the specification and claims wherever a reference is made to that sequence. The specification has been amended to recite the sequence identification number for each sequence referenced in the "Brief Description of the Drawings". Accordingly, reconsideration and withdrawal of the objection to the drawings is respectfully requested.

Claims 1 to 18, 20 to 26 and 28 to 37 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Blau (U.S. Patent No. 6,342,345 B1) in view of Barak (U.S. Patent No. 5,891,646). This rejection is respectfully traversed for the reasons set forth below.

First, it is respectfully submitted that there is no teaching or suggestion in either Barak or Blau to combine the references in the manner suggested in the Official Action. In particular, Blau broadly discloses methods and compositions for detecting protein-protein interactions using fusion proteins of β-galactosidase mutants. However, G-protein coupled receptors are not specifically disclosed by Blau. Further, while Barak teaches an assay method for GPCRs, the assay method of Barak does not involve the complementation of mutant forms of reporter enzyme (i.e., neither the GPCR nor the β-arrestin molecule in Barak are expressed as a fusion protein to a mutant form of reporter enzyme). In order to arrive at the Applicant's invention from the teachings of Barak and Blau, the Official Action makes the following unsupported assertions:

> An artisan of ordinary skill in the art of molecular biology would have recognized that the method of Barak, et al. was limited by the fact that it did not allow detection of the direct interaction of the fluorescent labeled β-arrestin employed therein with a specific G protein-coupled receptor. (page 6 of the Official Action dated March 21, 2002)

> That artisan would have realized that the fluorescent labeled β-arrestin would have accumulated at the cell membrane in response to the activation of any G protein-coupled receptor which might be present in the cell. (page 6 of the Official Action dated March 21, 2002)

. . . that artisan would have appreciated the fact that an accurate measurement of the ligand activation of a particular receptor by employing the method of Barak, et al. would require the inclusion of a control consisting of a cell which is otherwise identical to the test cell except for the absence of the receptor of interest. (pages 6-7 of the Official Action dated March 21, 2002)

That artisan would have understood that the method of detecting protein-protein interaction that was described by Blau, et al. would not have required such a control because it measured the direct interaction of two specific proteins and, therefore, would allow one to measure the direct interaction of β-arrestin with a specific G protein-coupled receptor in an intact cell irrespective of the interaction of β-arrestin with any other G protein coupled receptor which might be present in that cell. (page 7 of the Official Action dated March 21, 2002)

Therefore, that artisan would have found it *prima facie* obvious to have employed the β-galactosidase complementation system of Blau, et al. to detect the interaction of β-arrestin with a particular G protein-coupled receptor to identify agonists and antagonists thereto as taught by Barak, et al. because that artisan would have been more confident that the results obtained by the method of Blau, et al. were representative of the action of the particular receptor of interest. (page 7 of the Official Action dated March 21, 2002)

Further, because it was well known in the art that the activation of G protein-coupled receptors also involved the dimerization of those receptors as well as their interaction with a plurality of cytoplasmic proteins including G protein complexes and G protein-coupled receptor kinases, an artisan would have found it *prima facie* obvious to have employed the β-galactosidase complementation system of Blau, et al. to detect the interaction of any of these proteins with one another in an intact cell in response to receptor activation. (page 7 of the Official Action dated March 21, 2002)

It is respectfully submitted that the above line of reasoning could only have been arrived at with the benefit of the Applicant's disclosure. In particular, the Official Action makes reference to what one of ordinary skill in the art would have "recognized", "realized", "appreciated" or "understood" without providing support for these statements. It is respectfully submitted that the alleged shortcomings of the Barak assay method referred to in the Official Action are only apparent given the Applicant's disclosure of an improved receptor function assay for G-protein coupled receptors.

As set forth in The MPEP:

> . . . the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of Applicant's disclosure must be put aside in reaching this determination . . . The tendency to resort to "hindsight" based upon Applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. MPEP sec. 2142.

In view of the above, it is respectfully submitted that the rejection is an impermissible hindsight reconstruction of the Applicant's invention. Reconsideration and withdrawal of the rejection is therefore respectfully requested.

Additionally, it is respectfully submitted that the modification of the Barak reference in the manner set forth in the Official Action would fail to establish a case of *prima facie* obviousness since the modification would involve a change in the principle of operation of the reference. It is well established that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). In Ratti, the court reversed an obviousness rejection holding that the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.). See MPEP 2143.01.

Similarly, the modification proposed in the Official Action would require a substantial reconstruction and redesign of the assay method of Barak. Namely, in the assay methods of Barak, the test cell expresses GPCR and a conjugate of β-Arrestin and a visually detectable molecule. According to Barak, the test cell is then observed for evidence of translocation of the

detectable molecule (see, for example, column 2, lines 35-37 of Barak). For example, the translocation of the visually detectable molecule (e.g., from the cytosol to the cell edge) can be used to assay G-protein coupled receptor activity (see, for example, column 2, lines 43-52 of Barak). Thus, in Barak the movement of a visually detectable molecule bound to the β-arrestin molecule is being monitored. The principle of operation of Barak is therefore substantially different than the principle of operation of the invention as defined by Claim 1 wherein *the complementation of mutant forms of a reporter enzyme*, one expressed as a fusion protein to a GPCR and another as a fusion protein to an interacting protein partner, is being monitored. Accordingly, it is respectfully submitted that the invention as set forth in Claim 1 is patentable over the cited references. Therefore, in view of the above, reconsideration and withdrawal of the rejection of Claim 1 is respectfully requested.

Claims 2-8 depend either directly or indirectly from Claim 1 and are therefore also patentable over the cited references for at least the reasons set forth above with respect to Claim1. Reconsideration and withdrawal of the rejections of these claims is therefore also respectfully requested.

Claims 9, 10, 18 and 24, each recite a cell that expresses a GPCR as a fusion protein to a first mutant form of a reporter enzyme and an arrestin protein as a fusion to a second mutant form of the enzyme. Each of these claims is therefore patentable over the cited references for at least the reasons set forth above with respect to Claim 1. Claims 11-17 and 36 and Claims 25-26 depend from Claims 10 and 24, respectively, and are therefore also patentable over the references of record. Claims 31-35 and 37 depend from Claim 20 and are therefore also patentable over the references of record. Reconsideration and withdrawal of the rejections of these claims is therefore also respectfully requested.

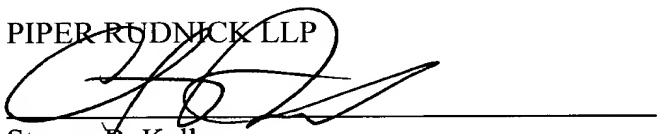
Claims 38-59 have been added. These claims depend from Claims 1, 9, 10, 18 or 34 and are therefore also patentable over the references of record for at least the reasons set forth above. These claims can also be further distinguished from the references of record. In particular, Claims 38, 43, 47, 52 and 56 recite that the GPCR and the first mutant form of reporter enzyme are linked together by a polypeptide linker represented by the formula $-(GGGGS)_n-$. Further, Claims 41, 46, 50, 55 and 59 recite that the second mutant form of the reporter enzyme is linked to the C-terminal of the arrestin protein. There is no teaching or suggestion in either of the Barak or Blau patents of a method as set forth in these claims. Accordingly, it is respectfully submitted that Claims 38-59 are patentable over the references of record.

CONCLUSION

All rejections having been addressed by the present amendments and response, Applicants believe that the present case is in condition for allowance and respectfully request early notice to that effect. If any issues remain to be addressed in this matter which might be resolved by discussion, the Examiner is respectfully requested to call Applicants' undersigned counsel at the number indicated below.

Respectfully submitted,

PIPER RUDNICK LLP



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SERIAL NO. 09/654,499

DOCKET NO.: 4085-226-27

MARKED-UP COPY OF PARAGRAPHS, AS AMENDED

Replacement for the second full paragraph at page 12, line 9 and blank line immediately thereafter:

FIGURES 10B-10J. Nucleotide sequence for pICAST ALC (SEQ. ID NO: 1).--

Replacement for the fourth full paragraph at page 12, line 16:

FIGURES 11B-11J. Nucleotide sequence for pICAST ALN (SEQ. ID NO: 3).--

Replacement for the first full paragraph at page 13, line 1:

FIGURES 12B-12J. Nucleotide sequence for pICAST OMC (SEQ. ID NO: 4).

Replacement for the third full paragraph at page 13, line 8:

FIGURES 13B-13J. Nucleotide sequence for pICAST OMN (SEQ. ID NO: 5).--

SERIAL NO. 09/654,499

DOCKET NO.: 4085-226-27

MARKED-UP COPY OF AMENDED CLAIMS

1. (Amended) A method of assessing the effect of a test condition on G-protein-coupled receptor (GPCR) pathway activity, comprising:

a) providing a cell that expresses a GPCR as a fusion protein to [one] a first mutant form of a reporter enzyme and an interacting protein partner as a fusion protein to [another] a second mutant form of the reporter enzyme;

b) exposing the cell to a ligand for said GPCR under said test condition; and

c) [monitoring activation of said GPCR by complementation of said reporter enzyme] detecting enzymatic activity of the reporter enzyme;

wherein increased reporter enzyme activity in the cell compared to that which occurs in the absence of said test condition indicates increased GPCR interaction with its interacting protein partner compared to that which occurs in the absence of said test condition, and decreased reporter enzyme activity in the cell compared to that which occurs in the absence of said test condition indicates decreased GPCR interaction with its interacting protein partner compared to that which occurs in the absence of said test condition.

9. (Amended) A method for screening a β-arrestin protein [or an unidentified arrestin or arrestin-like protein or fragment and mutant form thereof] for the ability to bind to activated GPCRs, comprising:

a) providing a cell that:

i) expresses at least one GPCR as a fusion protein to a first mutant form of a reporter enzyme; and

ii) contains a conjugate comprising a test β-arrestin protein as a fusion protein with [another] a second mutant form of the reporter enzyme;

b) exposing the cell to a ligand for said at least one GPCR; and

c) detecting enzymatic activity of the [complemented] reporter enzyme;

wherein an increase in enzymatic activity in the cell indicates β-arrestin protein binding to the activated GPCR.

10. (Amended) A method for screening a test compound for G-protein-coupled receptor (GPCR) agonist activity, comprising:

a) providing a cell that expresses a GPCR as a fusion protein to [one] a first mutant form of a reporter enzyme and an arrestin protein as a fusion protein to [another] a second mutant form of the reporter enzyme;

b) exposing the cell to a test compound; and

c) detecting [complementation of said] enzymatic activity of the reporter enzyme;

wherein increased reporter enzyme activity after exposure of the cell to the test compound indicates GPCR agonist activity of the test compound.

18. (Amended) A method of screening a test compound for G-protein-coupled receptor (GPCR) antagonist activity, comprising:

a) providing a cell that expresses a GPCR as a fusion protein to [one] a first mutant form of a reporter enzyme and an arrestin protein as a fusion protein to [another] a second mutant form of the reporter enzyme;

b) exposing the cell to said test compound;

~~c) exposing the cell to an agonist for said GPCR; and~~

d) detecting complementation of said reporter enzyme;

where exposure to the agonist occurs at the same time as, or subsequent to, exposure to

the test compound, and wherein decreased reporter enzyme activity after exposure of the cell to the test compound indicates that the test compound is an antagonist for said GPCR.

In re RATTI, 123 USPQ 349 (CCPA 1959)

In re RATTI

(CCPA)
123 USPQ 349

Decided Sept. 30, 1959
Appl. No. 6452
U.S. Court of Customs and Patent Appeals

Headnotes

PATENTS

1. Evidence—Judicial notice (§ 36.20)

It is common knowledge that resilient deformable materials such as natural or synthetic rubber are incompressible, i.e., while they may be deformed, this can occur only if design and mounting of part permits resilient material to change its shape in response to applied forces.

2. Patentability — Anticipation — Combining references (§ 51.205)

Patentability — Anticipation — Modifying references (§ 51.217)

Combination of J patent with C patent is not proper ground for rejection of claims since combination would require substantial reconstruction and redesign of elements shown in C as well as change in basic principles under which C construction was designed to operate; once applicant taught how this could be done, redesign may, by hindsight, seem to be obvious to one having ordinary skills in art, but, when viewed as of time applicant's invention was made, and without benefit of applicant's disclosure, court finds nothing in art of record which suggests applicant's novel device.

3. Court of Customs and Patent Appeals—Issues determined—Ex parte patent cases (§ 28.203)

Rejection reversed by Board is not before court.

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4. Patentability—In general (§ 51.01)

Novelty alone is not enough for patentability.

5. Patent grant—In general (§ 50.01)

Applicant is entitled to patent, under the statutes, unless one of the prohibitory provisions of statutes applies.

6. Patentability—In general (§ 51.01)

Patentability—Evidence of—In general (§ 51.451)

Patentability—Utility (§ 51.75)

Statutory requirements for patentability are novelty, usefulness, and unobviousness, as provided in 35 U.S.C. 101, 102, and 103; while proof that invention is better or possesses advantages may be persuasive of existence of any one or all of the requirements, and hence be indicative of patentability, Congress has not made such proof a prerequisite to patentability; moreover, Congress has never required that each and every patentable invention involve "progress" in the sense that it must possess some definite advantage over prior art; hence, it is improper to reject claim on ground that it does not possess some definite advantage over prior art; whileR.S. 4893 may be said to have given Commissioner some discretion in refusing to grant patent on an otherwise patentable invention unless "the same is sufficiently useful and important," Congress removed this provision from new 35 U.S.C. 131; this is further indication that it is intent of Congress that patentability be determined solely by sections 101, 102, and 103.

7. Court of Customs and Patent Appeals—In general (§ 28.01)

Pleading and practice in Patent Office—In general (§ 54.1)

It is duty of Patent Office and Court of Customs and Patent Appeals to apply law as Congress wrote it.

Particular patents—Oil Seal

Ratti, Oil Seal, claims 1, 4, 7, and 10 of application allowed.

Case History and Disposition:

Page 349

Appeal from Board of Appeals of the Patent Office.

Application for patent of Ferdinand J. Ratti, Serial No. 359,325, filed June 3, 1953; Patent Office Division 52. From decision rejecting claims 1, 4, 7, and 10, applicant appeals. Reversed; Kirkpatrick, Judge, dissenting with opinion in which Worley, Chief Judge, joins.

Attorneys:
CROMWELL, GREIST & WARDEN (RAYMOND L. GREIST of counsel) both of Chicago, Ill., for appellant.

CLARENCE W. MOORE (S. WM. COCHRAN of counsel) for Commissioner of Patents.

Judge:
Before WORLEY, Chief Judge, RICH, MARTIN, and SMITH, Associate Judges, and KIRKPATRICK, Judge *.

Opinion Text

Opinion By:
SMITH, Judge.

This is an appeal from the decision of the Board of Appeals of the United States Patent Office affirming the rejection by the Primary Examiner of claims 1, 4, 7 and 10 of appellant's application serial No. 359,325, filed June 3, 1953, for a patent on an "Oil Seal" for sealing the space between a bore in a housing and a relatively movable shaft centrally located in the bore.

Page 350

Claim 1 is representative of claims 4 and 7 and reads:

> 1. A seal for insertion in a cylindrical bore in a housing about a relatively movable centrally located shaft, comprising an annular bore-engaging mounting portion of resiliently deformable material for endwise insertion in and statically sealed engagement with the bore in the housing, an annular shaft-engaging portion connected with said bore-engaging portion for running engagement with the shaft, and a *metal ring* located adjacent one end of said bore-engaging portion, said ring being *provided with a plurality of axially extending outwardly biased spring fingers in outwardly clamped engagement with said bore-engaging portion* inwardly of the outer periphery of the latter, and said ring being *also provided* outwardly of said bore-engaging portion *with means for detachably connecting the ring to the housing* outwardly of the bore in the latter. (Emphasis ours.)

Claim 10 differs from the other claims on appeal and reads:

> 10. A seal for insertion in a cylindrical bore in a housing about a relatively movable centrally located shaft, comprising a sealing ring having an outer bore-engaging portion of resiliently deformable material, which portion is of somewhat larger diameter than the bore in the housing, for press-fit insertion in the bore, and a *metal retaining ring* associated with the sealing ring, said retaining ring being connected with the sealing ring and being provided outwardly of the latter *with resiliently yieldable hook formations which are adapted to be sprung into interlocking engagement with a complementary formation associated with the housing outwardly* of the bore, which engagement acts to prevent axial displacement of the sealing ring relative to the bore in the housing. (Emphasis ours.)

The references in the case are:

> Roth, 1,546,942, July 21, 1925.
>
> Norton, 1,951,034, Mar. 1, 1934.
>
> Jepson, 2,544,324, Mar. 6, 1951.
>
> Chinnery et al. (British), 578,526, July 2, 1946.

Appellant's shaft seal comprises an annular sealing member of resilient deformable material which is adapted to be inserted into a cylindrical bore surrounding a relatively movable shaft. The inner

portion of the sealing member is provided with a flexible lip which is held in engagement with the shaft by a garter spring. In the outer portion of the sealing member, an annular slot is provided which is concentric with and spaced from the outer periphery of the sealing member. This slot extends axially from the end of the member and provides a pocket in which the axially extending outwardly biased spring fingers of a metallic attaching ring are located. This construction permits the spring fingers to exert a force on the resilient material in the direction of the annular wall of the bore to provide and maintain a snug engagement between the outer surface of the resilient member and the inner surface of the bore. The metallic attaching ring is also provided with radially extending resilient hooks located outwardly of the bore engaging portion of the resilient member. The housing is provided with a complementary formation outwardly of the bore which is engaged by the resilient hooks to provide a snap-on connection between the bore and the seal.

The Roth and Norton patents were relied upon by the examiner in rejecting claim 10, and since both references were considered by the board, we have included them in our consideration of this case. Roth shows a gasket structure for steam train line hose couplings. Norton shows an adjustable repair clamp for bell and spigot joints in which there is provided a sheet metal bridge piece "preferably of spring material." The bridge piece is sprung into interlocking engagement with a structural portion of the clamp and exerts its force on a resilient packing ring which, if desired, may be cemented to it.

The Chinnery et al. patent is the reference principally relied upon by the Patent Office. It shows a housing provided with a bore surrounding a centrally located shaft. A reinforced and "stiffened" sealing member formed of a material such as rubber, is press fitted into the space between the bore and the shaft. The sealing member has an inner lip held in contact with the shaft by a garter spring. The bore engaging portion of the sealing member is "stiffened" by an axially extending cylindrical sheet metal casing which acts as a reinforcing member for a definite purpose which is described by Chinnery et al. as follows:

> Owing to the limited radial space within which the oil seal is to be accommodated, the holding portion of the oil seal cannot be stiffened by being massive. Consequently the holding portion of the present oil seal is stiffened in the known manner by a reinforcement, which may either encase or line, or alternatively constitute, such holding portion and therefore makes the press-fitting contact with the machine part stationary relatively thereto, *or may be an internal reinforcement in the sense that it does not make press-*
>
> Page 351
>
> fitting contact with the machine part stationary relatively thereto. (Emphasis ours.)

In Fig. 8 Chinnery et al. shows a radially extending flange at the outer edge of a reinforcing member of the internal reinforcement type which flange extends beyond the sealing member "to such an extent as to serve as a means of attachment of the oil seal to the housing *i,* additional to the interference press fit of the holding portion *a* in the housing recess *g.* " The aforesaid flange is shown attached to the housing by screws or bolts.

The Jepson patent relates to a gasket for sealing the space between the upper and lower vessels of a vacuum-type coffee maker. The gasket is an annular rubber member attached to the lower part of the upper vessel and is designed to fit into the upper part of the lower one. Located in a groove in the gasket is a sleeve member provided with axially and downwardly extending spring fingers which are so biased radially as to urge the lower peripheral portion of the gasket outwardly, thus effecting a tight engagement with the mouth of the lower vessel.

Claims 1, 4, and 7 stand rejected on Chinnery et al. in view of Jepson, on the ground that it would not require "invention" to replace the cylindrical sheet metal reinforcing member, which is secured to the Chinnery et al. sealing member, by an annular set of outwardly biased spring fingers shown by Jepson.

The problems which were solved by appellant's invention existed in this art at the time of his invention despite the Chinnery et al. disclosures. It was appellant rather than Chinnery et al. who provided the art with a shaft seal in which the resilient element of the seal could be readily inserted into a bore in the housing so that it could be removed from the bore and replaced by a new sealing element without mutilation of the sealing surface of the bore. This is particularly important, the specification points out, where the bore is formed in light metal alloys such as are used in aircraft engines and which are relatively soft and easily damaged. In appellant's oil seal, the resilient seal is so constructed that when mounted in the bore, it will establish and maintain a fluid tight relationship between the outer peripheral surface of the resilient seal member and the inside of the bore. Where either natural or synthetic rubber is used as the resilient sealing member in such seals, the rubber in time will take a set or lose its resiliency at least to the extent that the seals soon become ineffective to prevent leakage of oil. When subjected to mechanical pressures and heat, such a rubber sealing element loses its sealing effectiveness at an accelerated rate. The problems in the oil sealing art arising from such use of resilient sealing elements appear to have persisted because of the failure of the art to recognize these characteristics of the rubber sealing element and to so design the resilient element and the mounting therefor as to assure holding the outer circumference of the resilient sealing element in static oil-sealing contact with the inner circumference of the bore in which it is inserted.

Appellant's seal differs from the art of record in at least three respects:

> (1) The provision of the annular slot which extends axially inward from one end of the resilient sealing element. This feature is claimed as part of the combination set forth in claim 4.
>
> (2) The outwardly biased resilient spring means or fingers inserted in the resilient sealing element. These means are claimed as part of the combination of claims 1, 4 and 7.
>
> (3) The "snap-on" connector which holds the resilient sealing element and engages with a complementary formation associated with the housing outwardly of the bore. This feature is in the combination of claim 10.

The patents cited by the examiner, either alone or in combination, do not disclose a resilient shaft sealing element having these features.

[1] It is common knowledge that resilient deformable materials such as either natural or synthetic rubber are incompressible, that is, while they may be deformed, this can occur only if the design and mounting of the part permits the resilient material to change its shape in response to the applied forces.

The seal construction disclosed in Chinnery et al. is such that the "interference press fit" which that patent calls for is alone relied on to keep the seal tight. There is nothing in the Chinnery et al. patent to show how the resilient sealing element is *maintained* in resilient contact with the bore otherwise than by the resiliency of the rubber. If and when that resiliency is lost, the sealing effect will be impaired.

Considering the incompressible nature of the rubber in the sealing element disclosed in Chinnery et al., its stiffening and reinforcement by the cylindrical sheet metal member, and its "interference press fit" in the bore, it seems clear to us that the Chinnery et al. seal cannot function in the manner of appellant's seal. Now, as to the contention that Jepson would suggest inserting a set of spring fingers, the resilient element of Chinnery et al. is forced so tightly into the bore

and is so "stiffened" that the use of the resilient spring fingers of Jepson could not possibly increase the resilient deformation of the Chinnery et al. seal in the direction of the bore or increase the sealing

engagement of the seal with the bore. The teaching of the Chinnery et al. patent points away from the addition of any spring element. On the other hand, we find nothing in the disclosure of Jepson's coffee maker gasket to suggest that any part of it has applicability to shaft seals. The two arts are at least somewhat remote from each other even if they both involve sealing.

[2] We, therefore, find that Chinnery et al. did not teach the shaft sealing art how to solve the problems which existed in that art at the time of appellant's invention. We hold, further, that the combination of Jepson with Chinnery et al. is not a proper ground for rejection of the claims here on appeal. This suggested combination of references would require a substantial reconstruction and redesign of the elements shown in Chinnery et al. as well as a change in the basic principles under which the Chinnery et al. construction was designed to operate.

Once appellant had taught how this could be done, the redesign may, by hindsight, seem to be obvious to one having ordinary skills in the shaft sealing art. However, when viewed as of the time appellant's invention was made, and without the benefit of appellant's disclosure, we find nothing in the art of record which suggests appellant's novel oil seal as defined in claims 1, 4 and 7.

We shall now consider the rejection of claim 10, remarking first that it differs from claims 1, 4 and 7 in that it is directed to a combination of a housing bore, a resilient sealing ring and a metal retaining ring connected to the sealing ring, wherein the metal ring has *resilient hooks* which secure the seal in the bore. This claim is not limited to the outwardly biased spring fingers.

The examiner rejected claim 10 on two grounds: (1) that substitution for the screw securing means of Chinnery et al. of a series of spring hooks such as disclosed by Norton would not involve patentable invention, and (2) unpatentability over Roth.

[3] We shall first dispose of the second rejection. The board held that claim 10 is drawn to a combination of a sealing ring and a housing bore in which the sealing ring is detachably placed and that Roth discloses nothing of this nature. The board therefore reversed the rejection on Roth and consequently it is not before us.

As to the first rejection, the board recognized that it was on the ground of unpatentability "over Chinnery et al. in view of Norton" and pointed out that the examiner could see nothing patentable in substituting spring hook attaching means shown in Norton for the screws of Chinnery et al. It then said:

> Appellant argues that the references fail to suggest or teach how the proposed [claimed] combination could be made and after a careful consideration of the references, *we have concluded that he is correct in this respect. We therefore concede that the claim * * * defines novelty over the disclosure of Fig. 8 of Chinnery et al.* Novelty alone however, is no proper basis for the allowance of a claim. (Emphasis ours.)

[4] Although, in reaching this conclusion, the board made no reference to Norton, the context compels the conclusion that novelty was found notwithstanding the disclosure of Norton, taken together with Chinnery et al. We fully agree, of course, with the board's statement that novelty alone is not enough for patentability.

With the next statement of the board, in explanation of its affirmance of the rejection of claim 10, we do not agree. It reads:

> In order to *properly* define invention [meaning, of course, *patentable* invention], a claim should clearly define a structure *which possesses some definite advantage over the prior art.* As far as we can determine there is *no better* combination of housing and seal produced by using a series of snap fastener connections to connect the seal to the housing, as in appellant's structure, over using a series of bolts, as in the structure shown by Chinnery et al. Both act to merely detachably connect one element to another element and as far as we can find are

> merely equivalent connecting means especially in the absence of any unexpected result *or advantage* being obtained, by using one means in preference to the other, on which the record before us is entirely silent. (Emphasis ours.)

If we may extract from the foregoing what we understand to be the essence of the board's position in the matter, it is that claim 10 is not patentable, though it defines a combination which is novel over the disclosures of the references, because the claimed combination has not been shown to be any better than, or to possess any advantage over, what was known to the art.

[5][6] As was pointed out in In re Stempel, Jr., 44 CCPA 820, 241 F.2d 755, 113 USPQ 77, an applicant is entitled to a patent, under the statutes, unless one of the prohibitory provisions of the statutes applies. The statutory requirements

for patentability, broadly stated, are novelty, usefulness and unobviousness, as provided in 35 U.S.C. sections 101, 102, and 103. While it is true that proof that an invention *is* better or *does* possess advantages may be persuasive of the existence of any one or all of the foregoing three requirements, and hence be indicative of patentability, Congress has not seen fit to make such proof a prerequisite to patentability. [1]

[7]Appellant's invention, as defined in claim 10, has been held by the board to possess novelty over the disclosure of Chinnery et al. Just what the board thought about the pertinency of Norton is obscure but it seems to have regarded this reference as of little moment. Appellent in his brief here said that Norton was held by the board to have no bearing on the invention and the Patent Office brief said that the appellant was correct in so stating and that the court need not consider it. We are, therefore, virtually without any reference against claim 10 except Chinnery et al. and the rejection thereon is predicated solely on a theory of patentability we find to be outside of the patent statutes, namely, that the combination of claim 10 is, by reason of the use of spring retaining hooks instead of a series of bolts, *no better* than the combination of Chinnery et al. However intriguing such a ground of rejection may be, it is the duty of the tribunals of the Patent Office and of this court to apply the law as Congress has written it. While the provisions of the formerR.S. 4893 may be said to have given the Commissioner some discretion in refusing to grant a patent on an otherwise patentable invention unless "the same is sufficiently useful and important," when the Patent Codification Act of 1952 was enacted, Congress removed this provision from old section 36 of title 35, now section 131. We take this as a further indication that it is the intent of Congress that patentability be determined solely by the provisions of sections 101, 102 and 103. We therefore reverse the board on this ground of rejection of claim 10.

If the issue before us were whether or not the spring hooks *are* better than the Chinnery et al. bolts—and we consider this in the event we have misapprehended the position of the board—we would hold that they are, on the basis of what is disclosed in the application. This retaining means seems to possess many advantages over screws. Similarly, if the board was intending to say that the hooks and the bolts are merely equivalent connecting means and that claim 10 is unpatentable because its combination differs from the prior art only in the substitution of an equivalent for one element in an old combination, then we would also have to disagree since we think it is clear that the use of the spring hooks produces a result quite different from the bolts of Chinnery et al. On the record before us no reference relied on shows any spring hooks nor does it contain any support for the contention that bolts and spring hooks are equivalents.

For the foregoing reasons we reverse the rejection of claim 10.

The rejections of claims 1, 4, 7 and 10 are *reversed.*

Footnotes

Footnote 1. A critical essay on the existing law has recently appeared under the title "A Proposal for: A Standard of Patentability; Consonant Statutory Changes; A Manual on Determination of Patentability," by Malcolm F. Bailey, 41 J.P.O.S. 192-225, 231-257. It advocates, as we understand it, that the present law should be changed to set up as the test for patentability, in place of the requirement of section 103 that an invention be unobvious, a requirement that the invention involve *progress,* which the author finds in the constitutional provisions. Congress has not seen fit to include in the statutes, at any time during the past 169 years so far as we are aware, a requirement that each and every patentable *invention* shall involve "progress" in this sense, i.e., that each new invention must also be shown to possess some definite advantage over the prior art. The author relates the term "progress" to individual inventions and then gives it the connotation that each such invention should be a technical advance, improvement or betterment. The very making of the suggestion to change the law is an indication that the existing law is otherwise.

Concurring Opinion Text

Concur By:
MARTIN, Judge, concurs in result.

Dissenting Opinion Text

Dissent By:
KIRKPATRICK, Judge, dissenting, in which WORLEY, Chief Judge, joins.

I think that the board's rejection of claims 1, 4 and 7 should be affirmed. The central idea and the most important feature of these three claims, as well as of allowed claim 5, is the exertion of outwardly directed pressure upon the bore engaging portion of the sealing member, the result accomplished being to counteract the tendency of rubber to "set" or lose its resiliency and so become ineffective to prevent leakage. Jepson comes very close to completely anticipating this feature of the patent. All that would be necessary to make the anticipation complete would be to provide the Jepson seal with a shaft engaging portion and, incidentally, claim 7 does not specify any shaft engaging portion.

Of course, it was necessary that the seal be attached to the bore in a manner to prevent its displacement. Chinnery provides a flange and screws for this purpose and none of the three claims referred to calls for anything more specific than "means." Thus it seems clear that

claims 1, 4 and 7 show no patentable novelty as against the prior art of Chinnery plus Jepson.

The only question is whether Jepson is in a nonanalogous art sufficiently remote from that of the application to put it beyond the probability that it would be considered by persons skilled in the art endeavoring to solve the problem to the solution of which the application is directed. I do not think that it is. Jepson was trying to meet exactly the same problem as the application under consideration, namely, to provide a compressible seal which could be readily detached or inserted in a cylindrical bore but which would maintain a firm and leakproof seat on the bore when in place. I agree with the Solicitor's argument that one seeking to improve a machinery seal would reasonably be expected to investigate not only machinery seals but seals in other arts where similar problems would be encountered. See In re O'Connor, 34 CCPA 1055, 161 F.2d 221, 73 USPQ 433 .

Claim 10 stands on a somewhat different basis. This claim entirely omits what I think, and have stated above, to be the heart of the application. In substance, claim 10 really amounts to no more than a claim for a hook formation to interlock with the housing of a bore in order to hold a press fit

seal in place. [1]Chinnery discloses means to serve the same purpose consisting of screws.

The board conceded that the combination disclosed in claim 10, consisting of spring hooks to fasten a press fit seal to the bore, disclosed novelty over Chinnery but not patentable novelty.

I do not read the opinion of the board as predicating its conclusion of want of invention on the theory that in order to be patentable a combination must have some distinct advantage over the prior art. The board stated that there was nothing in the record to show that the substitution of hooks for screws produced any unexpected result or advantage and, therefore, concluded that the introduction of hooks did not create patentable novelty, but was a mere substitution of equivalents. The statement that the spring hooks of Ratti were no better than the screws of Chinnery was directed toward this point and seemingly was added to fortify the board's finding of equivalency rather than to propound a theory of patentability. I agree with the board that this claim, though it may show novelty over Chinnery, does not show patentable novelty, and I would affirm its rejection.

Footnotes

Footnote 1. Chinnery discloses a press fit seal, but no one has suggested that there is anything new about such a device and the specification of the application before us concedes that it is old in the art.

Footnote * United States Senior District Judge for the Eastern District of Pennsylvania, designated to participate in place of Judge O'CONNELL, pursuant to the provisions of Title 28, United States Code, Section 294(d).

- End of Case -

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